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ODP 81-296
6 MAR 1981

MEMORANDUM FOR: Deputy Director for Administration

FROM: Bruce T. Johnson
Director of Data Processing

SUBJECT: Scientific Programming Support to NFAC

1. The attached memorandum is a thorough discussion of the history of scientific programming support. It is quite clear from the memorandum that our present capability to support scientific applictions is considerably diminished. However, this was not done purposefully, but as a painful byproduct of the growing workload of mandatory requirements that confronted this office during the late 1970's.

2. The Office of Data Processing undertook to support the CAMS (COMIREX Automated Management System) for the Intelligence Community and the MAP (Management Assistance Program) for the DDA from a resource base of 80 professionals that was inadequate to handle these two requirements alone, let alone the ongoing workload. There was no higher management support (DDA level) for additional slots, indeed our applications workforce was actually reduced. Something had to give and we opted to reduce our investment in scientific programming. This action was consistent with the growing decentralization of scientific programming taking place in the Agency at the time.

3. Most scientific programming in the Agency is done under contract to DDS&T and NFAC components. The central investment in scientific programming support in ODP has never been large. However, we have always provided the computer resource for DDS&T and NFAC staff and contractors' scientific endeavors. In fact, the second largest use of our batch service is in support of scientific programming.

4. Over the years the Office of Scientific and Weapons Research (OSWR) has been impacted the most and continues today to feel the effect of our reduced investment in staff scientific programming support. We have already increased significantly our

investment in contractor support to OSWR and are presently negotiating for the creation of additional slots in OSWR into which we can place resident specialists with the requisite scientific skills under our rotation program. We believe these are the proper actions on our part to answer the NFAC requirement.

STAT

Bruce T. Johnson

Att: a/s

cc: NFAC ADP Control Officer

6 March 1981

MEMORANDUM FOR THE RECORD

FROM: [redacted] STAT
Chief, B Division
Office of Data Processing

SUBJECT: Scientific Programming Support for OSWR

1. Summary: The nature and extent of ODP's scientific programming support to NFAC and other Agency components has changed dramatically over the last seven years. ODP reorganizations and the transfer of ODP from the Directorate of Science and Technology were part of a conscious change of emphasis in ODP's data processing services. In applying data processing technology throughout the Agency, ODP scientific analysis skills have been necessarily displaced by data processing skills. As a result ODP analytical support for scientific applications has almost disappeared though scientific programming support remains viable.

Discussions with OSWR have emphasized ODP programming and systems support which can be provided efficiently and with a good cost-benefit justification and have de-emphasized analytical support which can not be provided with current personnel and hiring/training limitations. The ability to provide analytical support to OSWR has recently been severely weakened by the termination of a contractor team.

2. Background: Prior to June, 1973 the applications staff was organized on a functional basis. Support for scientific applications was provided by the Scientific Applications Division (SAD) which was staffed by some 34 staff employees and an average of eight co-operative program students and resident contractor employees. SAD personnel were primarily mathematicians, statisticians, physicists, engineers, and so forth who became competent in scientific programming in order to use computers effectively in their professional activities. A good number of Division members held advanced degrees in their discipline or obtained such degrees subsequent to their assignment to the Division.

ODP, then the Office of Computer Support (OCS), was in the Directorate of Science and Technology. The demand to support S&T operating elements was high, and the applications were pushing the state of computer technology.

In 1973 the functional basis for organizing applications was changed and the office was transferred to what is now the Directorate for Administration. With the subsequent advances in data processing technology the emphasis for ODP, then the Office of Joint Computer Support (OJCS), was to apply this technology more widely throughout the Agency. Data Processing training for non-OJCS personnel was provided, users in every office were provided with computer terminals, and many Data Base Management Systems (DBMS) were developed.

Although the shift in ODP support emphasis was not a direct attack on scientific analysis, it was perceived as such by some professionals. Skilled personnel transferred to the offices they had previously supported and were eagerly welcomed by these offices to provide a continuation of the support received from SAD. OD&E and FMSAC (today's OSWR) were the main beneficiaries of these transfers.

Since the mid-seventies most of the remaining people who were in SAD have been promoted to jobs in management. They have not been replaced by junior people with comparable skills.

3. Applications Support Today: The ODP applications organization today consists of two functionally organized divisions, A and C, which support non-scientific, and DBMS applications and two heterogeneous divisions, B and D, which support a variety of non-scientific, DBMS, and scientific applications.

The personnel in B and D divisions are more likely to have Computer Science degrees and/or experience rather than degrees in mathematics, the physical sciences, or engineering.

Within B Division one group is organized to support scientific applications. This group consists of five staff employees, two co-operative program students, and one contractor. Additionally one B Division senior analyst and twelve contractors support the TADS (Telemetry Analysis and Display System) for OSWR. One B Division senior analyst supports statistical applications Agency-wide, and one part-time senior analyst provides support to an ODP sponsored linear programming development project. Fourteen programmers in B Division are proficient in FORTRAN, the language commonly used for scientific applications.

D Division support to scientific applications is limited to short-term projects, mainly the conversion of contractor written software. One staff member who has a degree in mathematics currently provides this support.

4. Effect of Contractor Termination: Until mid 1980, ODP had a contract with the Geodynamics Corporation for six persons to support trajectory, aerodynamic vehicle and missile analysis, and programming for OSWR. One of the contractors was the key person for analysis using the Multiple Vehicle Simulation (MVS) program, a keystone in OSWR's analysis efforts.

The contract was terminated in 1980 at the direction of the ADD/NFAC because of security breeches by the contractor. The loss of the contractor personnel and the analytical skills they possessed was a crisis. ODP cannot replace the skills of this group except over a long term.

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5. Discussions with OSWR: Meetings with OSWR regarding general support have been held with the Deputy Chief, AVAD, [redacted] STAT and the NFAC ADP Control Officer, [redacted] In addition to the Geodynamics contract termination, the loss of key people in the Computer Applications Branch of AVAD (AVAD/CAB), and the increasing need for scientific applications support throughout OSWR made the level of ODP support an even more important issue.

In one meeting I said that ODP could provide maintenance support and limited development for OSWR programs. We could not provide test case analysis of the MVS program since the contractor with the required expertise had left. And we agreed that ODP could and would continue TADS support and development at the current level.

An effort to replace Geodynamics was planned for FY-81 but these contractors would most likely not be able to provide analytical support. Initially the contractors would be used for maintenance thus freeing up staff personnel who could then concentrate on program development.

One area for support that has a very high payoff - conversion of existing programs from other government or commercial sources - was mentioned. B Division had several requests from OSWR for program conversion at that time and since has received one other. ODP would provide this support although I asked that ODP not be requested to convert programs developed under an OSWR contract. STAT [redacted] agreed that ODP would be consulted to avoid OSWR developing programs that would not run on Agency computers.

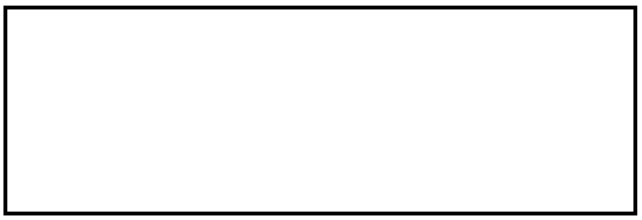
Rotations from ODP to OSWR were also addressed in light of the critical shortage of skilled programmers in the Computer Applications Branch. I agreed with the concept and benefits to be gained by both offices but added that a new rotation position during a hiring freeze would hurt ODP's ability to handle its already large workload.

6. Actions: B Division has developed a RFP for six contractor personnel for maintenance and development of scientific and non-scientific applications to replace the Geodynamics personnel.

B and D Divisions have agreed to transfer the OSO telemetry applications (and the one contractor doing these applications) from D Division to B Division. B Division thus has responsibility for telemetry related systems from the tapes entering the Agency, to batch programs processing the data, to the TADS and other analysis programs. This move, forced to a degree by the rotation of a key person to OSO, will hopefully allow the analytical process to be treated as a single system so that ODP resources can be allocated for the maximum benefit. One additional staff employee was assigned to work with the contractor.

B Division has also received a CDC-IBM FORTRAN conversion program from the Federal Software Exchange. This program, if it proves satisfactory, will make the conversion of contractor or government software more efficient.

7. Prognosis: Scientific applications support to OSWR and other Agency components will not reach the level previously provided by Scientific Applications Division. Although ODP has strength in its data processing expertise, the number of personnel supporting scientific applications is too low to sustain other than a minimum hold-on effort over the long term.



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